

REMARKS

In response to the Office Action dated December 14, 2001, claims 29, 38 and 45 are amended, and claims 41-44, directed to the non-elected invention, are canceled. Claims 2, 3, 5, 9-22, 29, 34, 35, 37-40 and 45 are now active in this application. No new matter has been added.

The indication that claims 9-22 and 37 are allowable is acknowledged and appreciated.

REJECTION OF CLAIMS UNDER 35 U.S.C. §103

Claims 2, 5, 29, 34, 35, 38-40, and 45 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Sato et al. (U.S. Patent No. 5,754,680).

The Examiner contends that Sato discloses generating a plurality of lines along a surface of the three dimensional form at column 5, lines 41-44, but admits that Sato does not disclose modifying the plurality of generate lines. However, the Examiner maintains that Sato discloses modifying patches on the model and reducing the number of nodal data, the patches being defined by latitudinal and longitudinal lines. Thus, the Examiner asserts that it would have been obvious to a person of ordinary skill in the art to adjust the lines defining the patches to change the size of the patch.

Claim 3 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Sato '680 in view of Letcher, Jr. (U.S. Patent No. 5,627,949), which the Examiner relies upon to teach defining control points and moving the control points along the surface of a model (col. 16, lines 29-40).

The rejections are respectfully traversed.

Sato describes approximation of a slit light at declination angle theta as a linear sequence. The end points of the linear sequence are converted to three-dimensional coordinates, and the

coordinates at the end points are defined as nodal points. Triangular patches are generated by connecting the nodal points. A surface model is made of a set of the triangular patches (column 1, lines 24-55). The surface model corresponds to the three-dimensional model of claim 29.

In independent claim 29, a plurality of lines are generated along a surface of the three-dimensional form model, the plurality of generated lines representing contours of the three-dimensional form model. However, Sato generates no data except the surface model of a set of triangular patches.

As noted in the response dated September 28, 2001, at steps S3-S7 in Sato, the plane patch generator 105 connects vertices of areas having the same normal orientation data and produces plane patches. However, this is quite different from the generation of the lines recited in claim 29. Because the surface model itself is represented as a set of plane patches, the generation of plane patches in step S7 *means modification of the surface model*. On the contrary, in claim 29, the generated lines extend only along the model, or they are different from the model itself. Therefore, after the modification, the modified lines still represent the contour of the model.

However, the Examiner maintains that the scope of claim 29 encompasses the scope of Sato, noting that the recitation "the plurality of generated lines represent contours of the three-dimensional form model" does not necessarily mean that the lines follow the shape of the model exactly.

No claim may be read apart from and independent from the disclosure on which it is based. *In re Cohn*, 169 USPQ 95, 98 (CCPA 1971); *In re Kroekel*, 183 USPQ 610, 612 (CCPA 1974):

... claims are not to be considered in a vacuum, "but always in light of the teachings of the prior art and the particular application disclosure as it would be viewed by one possessing the ordinary level of skill in the pertinent art." When considered in light of the prior art and the specification, claims otherwise indefinite may be found reasonably definite.

Given the above, it is quite clear that when the language

obtaining an electronic data *representing* a three-dimensional form model;
generating a plurality of lines along a surface of the three-dimensional form model, whereby the plurality of generated lines *represent* contours of the three-dimensional form model; and

modifying the plurality of generated lines by adding in the plurality of lines at least one line, moving at least one of the lines, or deleting at least one of the lines so that the plurality of lines still *represent* contours of the three-dimensional form model.

is read in light of the present specification, as is required, a person of ordinary skill in the art would understand that what is intended is exactly what the Examiner maintains that the language does not necessarily mean.

Thus, when claims 29 and 45 are read in light of the specification, a person of ordinary skill in the art would clearly understand that claim 29, claims 2, 3, 5, 34 and 35 depending from claim 29, and claim 45 are patentable over Sato. At any rate, to expedite prosecution, claim 1 is amended to recite:

obtaining an electronic data of a three-dimensional form model;
generating a plurality of lines along a surface of the three-dimensional form model, the plurality of generated lines corresponding exactly to contours of the three-dimensional form model; and
modifying the plurality of generated lines by adding in the plurality of lines at least one line, moving at least one of the lines, or deleting at least one of the lines so that the plurality of lines still correspond exactly to contours of the three-dimensional form model.

Claim 45 is similarly amended. Thus, amended claims 1 and 45 make explicit what was implicit.

As to claim 38, this claim recites, *inter alia*:

receiving a first electronic data representing a three-dimensional model of an object which has been acquired on the object;
generating a first portions on a surface of the three-dimensional model, wherein a capacity of the second electronic data is smaller than that of the first electronic data; and
generating a third electronic data representing a second portion different from the first portions, wherein a capacity of the third electronic data is smaller than that of the first electronic data.

As mentioned in the response dated September 28, 2001, also, Sato generates a surface model as a set of plane patches. Then, by integrating the plane patches in a certain area, the amount of data is decreased. Therefore, Sato has only two models (data):

A surface model (three-dimensional model) generated by measurement, and another surface model (three-dimensional model) generated by integration plane patches.

However, a relationship between the Sato's two models is different from those in claim 38 between the first and second data and between the first and third data. That is, in claim 38 the second electronic data (representing first portions on a surface of the three-dimensional model) and third electronic data (representing a second portion different from the first portions) each represent a portion of the model represented by the first data. In contrast, the second model data in Sato is provided by *modifying* the model represented by the first model data.

The Examiner refers to column 8, lines 45-46 of Sato as evincing that Sato meets the limitations of claim 38, in particular that the second and third data of Sato "represent" the model. However, *modifying* the model represented by the first model data to produce second three-dimensional data representing a shape of the object expressed by the plurality of longitudinal lines and the plurality of latitudinal lines does not mean that the second three-dimensional data are first portions on a surface of the three-dimensional model, which is what is

disclosed in the present application and the manner in which "first portions on a surface of the three-dimensional model" is to be read.

In view of the above, when claim 38 is read in light of the specification, a person of ordinary skill in the art would clearly understand that claim 38, and claims 39 and 40 depending from claim 38, are patentable over Sato. At any rate, to expedite prosecution, claim 38 is amended in the same manner as claims 1 and 45 to recite, *inter alia*:

receiving a first electronic data of a three-dimensional model of an object which has been acquired on the object;

generating a second electronic data corresponding exactly to first portions on a surface of the three-dimensional model, wherein a capacity of the second electronic data is smaller than that of the first electronic data; and

generating a third electronic data corresponding exactly to a second portion different from the first portions, wherein a capacity of the third electronic data is smaller than that of the first electronic data.

Thus, as with amended claims 1 and 45, amended claim 38 also makes explicit what was implicit.

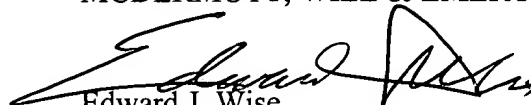
CONCLUSION

Accordingly, it is urged that the application, as now amended, overcomes the rejection of record and is in condition for allowance. Entry of the amendment and favorable reconsideration of this application, as amended, are respectfully requested. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Please amend claim 29, 38 and 45 as follows.

29. (Three Times Amended) A computer-implemented method of generating three-dimensional form data to be used in a computer apparatus, the method comprising the steps of:

obtaining an electronic data of [representing] a three-dimensional form model;

generating a plurality of lines along a surface of the three-dimensional form model, [whereby] the plurality of generated lines corresponding exactly to [represent] contours of the three-dimensional form model; and

modifying the plurality of generated lines by adding in the plurality of lines at least one line, moving at least one of the lines, or deleting at least one of the lines so that the plurality of lines still correspond exactly to [represent] contours of the three-dimensional form model.

38. (Amended) A computer-implemented method of processing an electronic data representing a three-dimensional model, the method comprising the steps of:

receiving a first electronic data of [representing] a three-dimensional model of an object which has been acquired on the object;

generating a second electronic data corresponding exactly to [representing] first portions on a surface of the three-dimensional model, wherein a capacity of the second electronic data is smaller than that of the first electronic data; and

generating a third electronic data corresponding exactly to [representing] a second portion different from the first portions, wherein a capacity of the third electronic data is smaller than that of the first electronic data.

45. (Amended) A computer-implemented method of generating three-dimensional form data to be used in a computer apparatus, the method comprising the steps of:

obtaining an electronic data of [representing] a three-dimensional form model;

generating a plurality of lines along a surface of the three-dimensional form model, [whereby] the plurality of generated lines corresponding exactly to [represent] contours of the three-dimensional form model; and

modifying the plurality of generated lines by adding in the plurality of lines at least one line, or moving at least one of the lines so that the plurality of lines still correspond exactly to [represent] contours of the three-dimensional form model.